Department of Toxic Substances Control

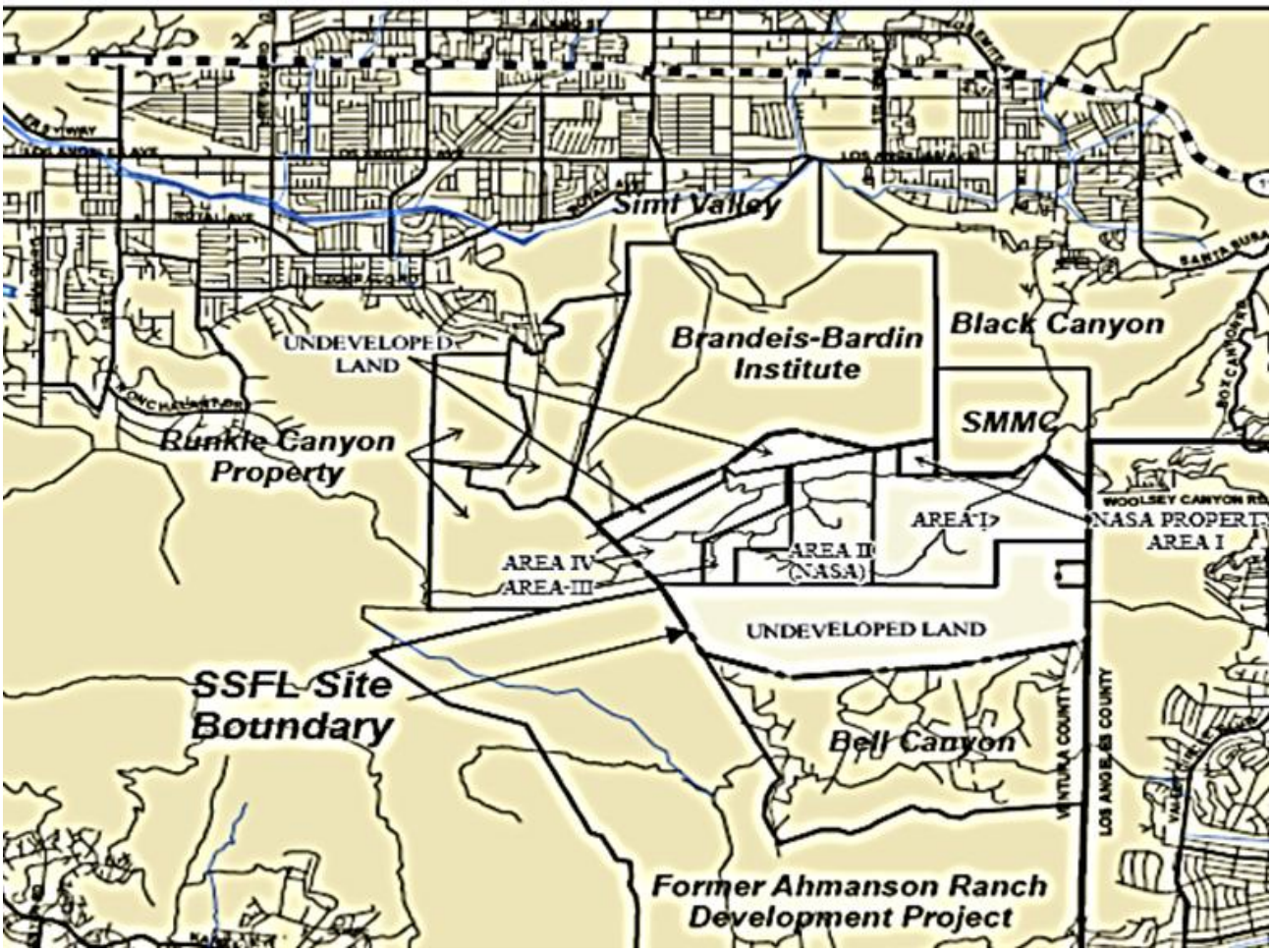
***Matthew Rodriquez***
Secretary for
Environmental Protection

Deborah O. Raphael, Director
8800 Cal Center Drive
Sacramento, California 95826-3200

***Edmund G. Brown Jr.***
Governor

# SANTA SUSANA FIELD LABORATORY
# MONTHLY STATUS REPORT
# March 2012

This monthly update is to inform the community of the Santa Susana Field Laboratory (SSFL) investigation and cleanup activities under the California Department of Toxic Substances Control's (DTSC) oversight that occurred between February 20, 2012 and March 23, 2012 and activities that are expected to occur in the next 30 days.



## Activities Completed:

### *Soil Investigations*

#### *U.S. Department of Energy (DOE)*

DTSC and the United States Department of Energy (DOE) are participating in chemical soil sampling efforts in Area IV of the SSFL property where former DOE activities occurred on the Site. Area IV is a 290-acre area located in the northwestern section of the site. It is currently owned by Boeing, with a 90-acre section that is leased to the DOE. Area IV includes the Energy Technology Engineering Center (ETEC) facility where nuclear research, development, and testing began in the 1950's.

The Area IV radiological soil sampling effort is being conducted by the United States Environmental Protection Agency (US EPA). The US EPA approached the investigation by splitting the Area IV and Northern Buffer Zone (NBZ, collectively referred to as the "Site") investigation into historical site assessment (HSA) subareas. The chemical soil sampling efforts follow the same HSA subarea designations. DOE and DTSC are participating in Area IV and NBZ co-located soil sampling for chemical contaminants, which includes three phases, as specified in the December 2010 Administrative Order on Consent for Remedial Action (AOC), signed by DTSC and DOE:

- Phase 1 sampling for chemical analysis at US EPA's first phase of radiological sampling locations in Area IV and the NBZ.
- Phase 2 sampling is identified as randomly selected sampling locations, and
- Phase 3 sampling is identified as the Chemical Data Gap Investigation, which shall be used to determine the locations at the Site where insufficient chemical data exists and additional chemical investigation is necessary.

US EPA in coordination with DTSC and DOE is implementing its second round of sampling efforts to define the nature and extent of radiologic contamination in Area IV. US EPA's round two sampling locations are based upon the validated sampling results they received from their Phase 1 sampling.

Findings of the chemical data gap investigation may not result in sampling at all of the same locations that US EPA identifies for additional sampling during the second round of their investigation. Not all of US EPA's round 2 sample locations will need to be sampled for chemical contaminants and chemical data gap investigation locations may be required where no radiological sampling is needed. The rationale and selection of chemical data gap investigation sampling locations will be provided in the Work Plan for Chemical Data Gap Investigation, Phase 3 Chemical Sampling at Area IV, and discussed with the community. Phase 3 activities are anticipated to begin in early 2012. Below is a summary of the Phase1 efforts.

***Soil Investigations (continued)***

Northern Buffer Zone

- On March 9, 2012, DTSC reviewed and approved the Draft Addendum to Phase 1 Master Field Sampling and Analysis Plan for the Northern Buffer Zone.
- 25 of 93 Phase 1 soil sampling locations completed.
- Sampling of Phase 2 random sampling locations will soon commence.

Sediment Drainage Sampling

- All field work completed
- All chemical analytical data received and validated.
- Technical Memorandum summarizing analytical results submitted in October 2011 and a revised report was submitted in January 2012.

HSA-5C

- All field work completed
- All chemical analytical data received and validated.
- Technical Memorandum summarizing analytical results issued (available on DOE and DTSC web sites).

HSA-5B

- All field work completed
- All chemical analytical data received and validated
- Technical Memorandum summarizing analytical results will be submitted in the near future.

HSA-5A

- All field work completed
- All chemical analytical data received and validated.
- Technical Memorandum summarizing analytical results submitted in February 2012.

HSA-8N

- All field work completed
- All chemical analytical data received and validated
- A Technical Memorandum summarizing analytical results will be submitted soon. This report will include data and results from HSA-8S. Only one report will be submitted for HSA 8 North and HSA 8 South.

## ***Soil Investigations (continued)***

HSA-5D North
- All field work completed
- All chemical analytical data received and validated.

HSA-5D South
- All field work completed
- All chemical analytical data received and validated.

HSA-6
- All field work completed
- All chemical analytical data received and validated.

HSA-7
- All field work completed
- All chemical analytical data received and validated.

HSA-3
- All field work completed
- All chemical analytical data received and validated.

HSA-8 South
- All field work completed.
- All chemical analytical data received and validated
- A Technical Memorandum summarizing analytical results in progress and will be submitted soon. These results will be included in the combined HSA 8 North and 8 South report as stated above.

**Recently Completed**
Deep Soil Borehole Soil Sampling completed per DTSC-approved Addendum No. 7 to Master Work Plan/Field Sampling and Analysis Plan (CDM, January 2012): Work included a total of twelve (12) borings.

## ***Soil Investigations***

### ***NASA***
NASA is currently conducting chemical data gap investigations to complete soil and surficial media characterization at the two SSFL areas under its administration, which include the 41-acre NASA portion of Area I (the former Liquid Oxygen (LOX) Plant) and 409-acre Area II. Area II was used primarily for rocket engine testing and includes the

***NASA (continued)***
Alfa, Bravo, Coca and Delta Test Stands and support structures. Under the terms of the December 2010 AOC, NASA is developing and implementing a series of five Field Sampling Plans (FSPs) to address data gaps in the soil investigations. The review process for each of these FSPs includes a public roundtable meeting and site tour of the sites. A sixth NASA surficial media FSP will be prepared in late 2012 to account for any data gaps remaining from the initial five FSPs.

A summary of the five current NASA surficial media FSPs is provided below:
FSP-1 (Alfa-Bravo Fuel Farm, Coca-Delta Fuel Farm, Propellant Load Facility)

- All soil chemical field work completed
- Samples submitted for chemical analysis
- Data Summary Report anticipated in Summer 2012

FSP-2 (Incinerator/Ash Pile/Sewage Treatment Plant, Building 204, Storable Propellant Area, and Skyline Road)

- All soil chemical field work completed
- Samples submitted for chemical analysis
- Data Summary Report anticipated in Summer 2012

FSP-3 (Alfa Test Stand, Bravo Test Stand)

- Field sampling in progress, complete in April 2012
- Data Summary Report anticipated in Summer 2012
- DTSC approved the revised NASA FSP-3 document in February 2012

FSP-4 (Liquid Oxygen Plant, Area 2 Landfill, Expendable Launch Vehicle)

- Work Plan in DTSC review
- Approval anticipated in March 2012

FSP-5 (Coca Test Stand, Delta Stand, R2 Ponds)

- Draft Work Plan public meeting held March 8, 2012
- DTSC Work Plan review anticipated for mid-April 2012

***Boeing***
Boeing owns most of Area I and all of Areas Ill and IV. Areas I and Ill total 791 acres and are operated by Boeing. Boeing also owns the 1143 acre southern buffer zone and 182 acre northern buffer zone. Soils in Area IV and the northern buffer zone are being characterized in the DOE portion of the project.

Boeing continues to investigate and characterize soils in Area I, Area Ill, and the southern buffer zone. Data Gap Sampling and Analysis Plans (Data Gap SAPs) will be prepared to address data gaps identified in the RCRA Facility Investigation Reports

***Boeing (continued)***
submitted to date. DTSC anticipates these activities will complete the characterization of the Boeing sites.

Boeing sites are located in Reporting Groups 1A, 1B, 5, 9 and 10. Boeing intends to prepare the Data Gap SAPs in subgroups identified as Boeing RFI Groups:

- 1A North, 1A Central, 1A South
- 1B North, 1B Southwest, 1B Southeast
- 5/9 North, 5/9 South, and
- Group 10

**Recently Completed**
Boeing submitted a draft Data Gap SAP Work Plan and an example site SAP for DTSC. The Work Plan describes how Boeing will use the data quality objective process to identify data gaps and how additional characterization activities will be planned. The example site SAP uses STL-IV as a model to show how the process works. DTSC is currently reviewing the Data Gap SAP Work Plan and example site SAP.

***Groundwater Characterization and Cleanup***
The groundwater characterization and cleanup program is being conducted by Boeing on behalf of the three parties at the site; Boeing, DOE and NASA. The groundwater characterization and cleanup program consists of:

- Investigation and characterization of groundwater contamination
- Ongoing groundwater monitoring of existing wells,
- Sampling of new groundwater locations, and
- Treatment and disposal of contaminated groundwater.

***Groundwater Interim Measures***

- Evaluation of pumping at WS-09A ongoing. This pumping is being done to lower groundwater elevation and reduce the amount of trichloroethene (TCE) contamination in the groundwater in this area of the Site. WS-09A is located along the southern boundary of the property Pumping at WS-9A has been intermittent as modifications to the treatment plant have been made.
- Water levels at WS-9A, at newly installed wells, and the condition of area springs are being monitored to confirm that discharge from the springs is controlled during both periods of pumping and non-pumping.
- A Technical Memorandum for work being conducted at WS-9A is being developed for submittal to DTSC.

***Groundwater Remedial Investigation (RI) Report***

The Groundwater RI Report provides information on chemicals and radionuclides in groundwater at the site including where the contaminants are, and how they move through the sandstone and shale bedrock.

- On March 23, 2012, DTSC received a proposal from Boeing, DOE and NASA on the process to address the data gaps and concerns raised by DTSC and in public comments.

***Groundwater Monitoring***

- Boeing submitted the 2011 Annual groundwater report (dated Feb., 29, 2012)

***Feasibility Study***

A feasibility study (FS) identifies, develops, and evaluates a range of potential technologies, including experimental technologies that can be used for the containment, treatment, remediation, and/or disposal of contamination. Additionally, treatability studies of appropriate technologies are identified and evaluated for consideration in the feasibility study.

Boeing developed an FS Work Plan for SSFL site-wide groundwater and for bedrock/soils at Boeing sites. The FS Work Plan lays-out the process for how the FS will be implemented. The FS Work Plan is currently in DTSC review.

Because the 2010 AOCs dictate cleanup levels, NASA and DOE may conduct treatability studies for soils, but they are not required to perform feasibility studies.

***Treatability Studies***

Treatability studies are being conducted on several technologies to be evaluated in the feasibility study. The treatability studies address both soil/bedrock and groundwater contamination. Treatability studies can be either field studies or laboratory studies.

Four laboratory studies, all for groundwater, are being conducted:

- Chemical oxidation using potassium permanganate;
- Thermal heating of rock core;
- Microbial characterization of rock core and porewater; and
- Bio Stimulation.

Two field tests have been proposed:

- Bedrock Vapor Extraction; and
- In-situ chemical oxidation (groundwater)
- Boeing's contractors are continuing work on the chemical oxidation, microbial characterization, and biostimulation laboratory studies.

***Treatability Studies (continued)***

- DTSC is currently reviewing the addenda for the bedrock vapor extraction and in-situ chemical oxidation Work Plans (dated January 31, 2012.)

***Chemical Background Study (Soil)***

The chemical background samples have gone through preliminary analysis and results are undergoing data validation, statistical evaluation and DTSC review.

***Building Demolition***

- The demolition of the Hydrogen Lab has begun and is nearing completion

***Risk Assessment****:*

- DTSC submitted comments on Boeing's Group 1A RCRA Facility Investigation (RFI) report, human health risk assessment.
- DTSC submitted comments on the human health risk assessment portion of the Group 5 RFI report.

***CEQA***

- DTSC and Boeing are in the procurement process to select a CEQA contractor.

***Public Outreach***

- On March 8, 2012, DTSC and NASA hosted a public site tour and technical meeting to discuss the NASA FSP for Subgroup 5. The comment period for this FSP ends on April 6, 2012.
- DTSC, DOE, and US EPA hosted a community site tour on March 21, 2012. Community members were given a demonstration on how the GPS device is used to stake sampling locations identified in the approved sampling plan.

***Interim Source Removal Actions:*** *(Note: ISRA activities are conducted under the authority of the Los Angeles Regional Water Quality Control Board (LA-RWQCB))*

- DTSC participated in project status meeting on March 14 typically held once every two weeks. The March 7 ISRA meeting was canceled due to persistent dry weather and no significant activity or new information.
- As of March 14, all ISRA excavation work continues to be on hold until end of rainy season. Issues discussed during March 14 ISRA planning meeting included confirmation sampling locations for Ash Pile/Sewage Treatment Plant (AP/STP) area excavations. ISRA excavation work is anticipated to restart in late-April/early-May time period. AP/STP ISRA excavation areas status:
    - AP/STP-1E-1,-3: Excavation complete; restoration activities to occur once AP/STP-1E-2 is complete.
    - AP/STP-1C-2, -1E-2: Planned excavation completed; confirmation sample results received; additional excavation to continue after the rainy season.

***Interim Source Removal Actions (continued)***

- AP/STP-1B: Planned excavation partially completed (eastern portion); confirmation sample results received; additional excavation to continue after the rainy season.
- AP/STP-1C-1: Agencies/Boeing/NASA delineated soil below radiological trigger levels; excavation to begin after the rainy season.

**Proposed for the Next 30 Days:**

***Soil Investigations***

**DOE**

- Draft Phase 3 Master Work Plan, including Field Sampling and Analysis Plan, Quality Assurance Project Plan, and Site-Specific Health and Safety Plan
- Draft Addendum to Phase 3 Master Field Sampling and Analysis Plan for Subarea 5C
- Draft Addendum to Phase 1 Master Field Sampling and Analysis Plan for the Northern Buffer Zone

**NASA**

- Comment period for Subgroup 5 Field Sampling Plan ends April 6, 2012.

**Boeing**

- DTSC will finalize comments on the DQO (data quality objectives) technical memorandum.
- DTSC will review and comment on the Data Gap SAP Work Plan and example site SAP.
- DTSC will finalize comments on the addenda for the bedrock vapor extraction and in-situ chemical oxidation treatability studies.
- Boeing will continue to develop Data Gap Sampling and Analysis Plans for sites in Areas I and III.

***Chemical Background Study:***

- DTSC will present initial validated data to community stakeholders April 11, 2012.
- DTSC expects to have the complete data set available by late-May 2012, and a draft chemical background report available for public comment in June 2012.

***Groundwater Investigations:***

- DTSC will respond to Boeing, DOE and NASA proposed approach to address data gaps identified by DTSC.

***Groundwater Investigations (continued)***

- Boeing and DTSC will continue to meet to discuss comments on the draft Groundwater RI report and groundwater data gap investigation work.

***Groundwater Monitoring***

- Continue Q1 2012 groundwater monitoring analysis and data validation.

***Groundwater Interim Measures***

- DTSC is working on the CEQA document for the Groundwater Interim Measures effort that includes installation of eight source zone groundwater wells.

***Interim Source Removal Actions:*** *(Note: ISRA activities are conducted under the authority of the Los Angeles Regional Water Quality Control Board (LA-RWQCB)*

- DTSC will continue to participate in ISRA bi-weekly project meetings.
- ISRA performance monitoring and BMP subarea monitoring inspections and sampling in Outfall 008/009 watersheds will be conducted as necessitated by rain events.

***Public Outreach***

- On April 5, 2012, US DOE will host a meeting at 6:00 pm at Corporate Pointe in West Hills to update the community and seek input on the soils treatability investigation.
- DTSC will host a community meeting to discuss initial results of the background study for chemicals in soil on April 11, 2012 at 6:00pm in the DTSC Chatsworth Office.
- The US EPA will host a community stakeholder meeting on April 18, 2012 at 9:00 am at SSFL to share data collected during their background study for radionuclides.
- DTSC will continue to provide monthly updates regarding the progress of the site investigation and cleanup process to the community.